

REMARKS

Claims 4, 5, 7, 16, 20, 24, 25 and 28-32 are pending. Claims 18 and 22 are cancelled. Claims 50-55 are added. Claims 34-49 are allowed. Claims 16 and 20 are amended. No new matter is submitted. Accordingly, entry of the amendments made herein is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. 1.121 (c)(ii)).

Applicants appreciate the indication of claims 34-49 as allowed in item 9 of the Office Action. Applicants further appreciate the indication, in item 8 of the Office Action, of claims 18 and 22 as containing allowable subject but for their dependency from rejected claims 16 and 20, respectively. By this amendment, claims 18 and 20 have been cancelled rendering the objection to claims 18 and 22 moot. Further, the allowable subject matter of claims 18 and 22, as identified in item 8 of the Office Action, has been incorporated into independent claims 16 and 20, respectively. Claims 16 and 20 are thus allowable. Accordingly, Applicants respectfully request recognition of claims 16 and 20 as allowed.

In item 4 of the Office Action, claim 4 is rejected as allegedly unpatentable over Fisher (U.S. Patent No. 5,276,701) in view of Ueyama (U.S. Patent No. 5,530,306). The rejection is traversed.

Applicants' invention comprises a paper pulp processing apparatus, or disk refiner, comprising at least bearings supporting a rotatable drive member, or rotor, and controlling a combination of axial and radial movement of the rotatable drive member or rotor, as recited in each of independent claims 4, 7, 16 and 20. Independent claims 28 and 31 recite methods that similarly rely on bearings supporting a rotatable member, or rotor, and controlling axial and radial movement thereof. New claims 50-55 further recite having conical surfaces at ends of the rotatable member, or rotor, that engage the bearings to control axial and radial movement of the rotatable member, or rotor. By engaging the bearings with a rotatable member, for example rotor 15, as described in the Specification at page 8, lines 2-5 and shown in Figures 2 and 3, the rotor 15, or other rotatable member, may be positioned appropriately during pulp processing to refine gap 52 clearances by actively moving the rotor 15 axially and/or to adjust the orbit path of the rotor 15 by actively moving the rotor 15 radially. (See also the Specification at page 10, lines 2-11). Thus, the bearing induced axial and radial motions during processing represent

ongoing adjustments based on feedback of the pulp stock and machine conditions that render the rotor more effective at agitating the pulp stock while also minimizing contact wear of the movable parts as the pulping process, for example, occurs. None of the references applied teach, disclose or suggest the combination of features claimed or advantages provided by the Applicants' invention.

Fisher discloses an attrition mill apparatus having anti-friction bearings 91 and 121 housed in bearing housings 90 and 120, respectively, that radially support opposite ends of a shaft 45. As the Office Action concedes at items, 4, 6 and 7, Fisher does not disclose bearings that control axial and radial positioning of a rotatable member as in the claimed invention. As a result, Fisher cannot possibly be construed as teaching, disclosing or suggesting bearings supporting a rotatable member and controlling axial and radial movement of the rotatable member as in each of the pending independent claims, including claim 4. Nor can Fisher be construed as disclosing or suggesting the engagement of conical ends of the rotatable member with the bearings as recited in new claims 50-55. The Office Action, at items 5, 6 and 7, further concedes that Fisher does not teach a variable speed motor as recited in independent claims 7, 28 and 31.

Ueyama is relied on to overcome the deficiencies of Fisher with respect to the bearings. However, the only bearings identified in Ueyama are radial bearings 2, 3 that purport to control direction of a rotating member 1 in an X axis using portions 4, 5 of the radial bearings 2, 3. The portions 4, 5 of Ueyama neither support conical ends of the rotor as recited in claims 50-55, nor do the portions 4, 5 of Ueyama control axial and radial movement directly as in the claimed invention. Rather, the portions 4, 5 of Ueyama are more akin to mere axial position sensors having no bearing capacity. The only "axial" aspect of the portions 4, 5 of Ueyama is that they contribute to a calculation of a center of mass change to the rotor 1 that likely shuts the Ueyama system down if the center of mass of rotor 1 renders the system unstable. In fact, the portions 4, 5 of radial bearings 2, 3 of Ueyama could not conduct the axial movement control as in the claimed invention because they are not even on the axial ends, but instead are somewhat removed from the ends (See Fig. 3). The interface of the bearings of the claimed invention with the rotatable member, or rotor, enables control of movement of the rotor in both the axial and the radial directions in a direct manner that Ueyama simply fails to teach, disclose or suggest. Thus, Ueyama fails to overcome the deficiencies of Fisher.

Accordingly, as neither Fisher alone, nor Fisher in combination with Ueyama, teach, disclose or suggest the combination of features claimed, withdrawal of the 35 U.S.C. 103e (a) rejection of claim 4 is respectfully requested.

In item 5 of the Office Action, claim 5 is rejected as allegedly unpatentable over the combination of Fisher and Ueyama as applied to claim 4, and further in view of Lucas (U.S. Patent No. 5,887,808). The rejection is traversed.

Applicants' invention is discussed above. Likewise, the combination of Fisher and Ueyama is discussed above. Lucas fails to overcome the deficiencies of the combination of Fisher and Ueyama as discussed above. Thus, claim 5 depends from a patentably distinguishable and allowable claim 4. Accordingly, withdrawal of the 35 U.S.C. 103(a) rejection of claim 5 is respectfully requested.

In item 6 of the Office Action, claims 7, 13, 14, 28, 29 and 31 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over the combination of Fisher, Ueyama and Lucas. The rejection is traversed.

Applicants' invention and the combination of Fisher, Ueyama and Lucas are discussed above. The combination of Fisher, Ueyama and Lucas in combination with no other reference, fails to overcome the underlying deficiencies of the combination of Fisher, Ueyama and Lucas as discussed above. Thus, claims 7, 13, 14, 28, 29 and 31 are patentably distinguishable from the art applied and allowable as a result. Accordingly, withdrawal of the 35 U.S.C. 103(a) rejection of claims 7, 13, 14, 28, 29 and 31 is respectfully requested.

In item 7 of the Office Action, claims 4, 5, 7, 13, 14, 16, 20 and 28-32 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over the combination of Fisher and Ueyama in view of Giardini (U.S. Patent No. 3,932,069). The rejection is traversed.

Applicants' invention and the combination of Fisher and Ueyama is discussed above. Giardini, applied for a variable reluctance motor in a chamber, fails to overcome the underlying deficiencies of the combination of Fisher and Ueyama as discussed above. Thus, claims 4, 5, 7, 13, 14, 16, 20, and 28-32 are patentably distinguishable over the art applied and allowable as a result. Accordingly, withdrawal of the 35 U.S.C. 103(a) rejection of claims 4, 5, 7, 13, 14, 16, 20 and 28-32 is respectfully requested.

Reconsideration of the application is respectfully requested. Applicants submit that the claims presented, in view of the remarks made herein, are patentably

distinguishable from the art applied. Accordingly, allowance of claims 4, 5, 7, 16, 20, 28-32, 34-49 and 50-55 is respectfully solicited.

Should the Examiner determine that anything else is desirable to place this application in even better form for allowance, the Examiner is respectfully requested to contact the undersigned at the telephone number below.

Respectfully Submitted,

11/4/02
Date

Bruce E. Peacock
Bruce E. Peacock,
USPTO Reg. No. 28,457

Attachments:

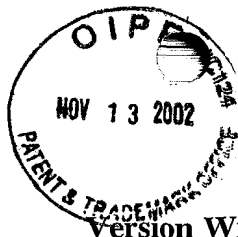
Appendix
Claims Fee Transmittal

DEPOSIT ACCOUNT USE AUTHORIZATION

Please charge any fee necessary or due to assure entry to:

Wegman, Hessler & Vanderburg's USPTO Deposit Account No. 502431

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37 C.F.R. 1.121 (c)(1)(ii)
Version With Markings to Show Changes Made

Claims 18 and 20 are cancelled.

16. (Amended) A disk refiner comprising a switched reluctance motor comprising a stator and a rotor rotatably disposed along a longitudinal axis within said stator, said rotor carrying a refiner plate, a second refiner plate positioned along said longitudinal axis and adjacent said first refiner plate, and magnetic bearings operatively associated with said stator and rotor for supporting said rotor, the disk refiner further comprising an end plate adjacent said stator and rotor and having said second refiner plate mounted thereon, and linear movement actuator means for selectively moving said second refiner plate along said longitudinal axis toward and away from said first refiner plate.

20. (Amended) A disk refiner comprising a switched reluctance motor comprising a stator and a rotor rotatably disposed along a longitudinal axis within said stator, said rotor having a first end carrying a first refiner plate and a second end carrying a second refiner plate, first end plate spaced axially from said first refiner plate and a second end plate spaced axially from said second refiner plate with said first and second end plates and said stator defining an enclosed housing, a third refiner plate mounted on said first end plate and axially spaced from said first refiner plate, a fourth refiner plate mounted on said second end plate and axially spaced from said second refiner plate, and magnetic bearings operatively associated with said stator and rotor for levitatingly supporting said rotor with said stator, the disk refiner further comprising a first linear actuator means for selectively moving said third refiner plate along said longitudinal axis toward and away from said first refiner plate and a second linear actuator means for selectively moving said fourth refiner plate along said longitudinal axis toward and away from said second refiner plate.

Claims 50-55 are added.